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A DEVICE FOR SEALING SOIL FUMIGATION FURROWS

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A DEVICE FOR SEALING SOIL FUMIGATION FURROWS

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Eradication of the burrowing nematode from Florida citrus groves is accomplished by destroying the diseased trees and treating the infected ground with liquid soil fumigant. The application of this material is made with heavy equipment mounted on crawler-type tractors. Fumigation of the loose sandy soil found in Florida's citrus belt presents a number of problems, one of the most important being that of sealing the soil surface of the furrow made during application of the fumigant. Conventional packing wheels have proved unsatisfactory because they sink into the loose sand, leaving ridges and sealing only a narrow band over the furrow. The equipment described below has proved effective in sealing furrows.

This unit is designed for use with a special heavy duty soil fumigant applicator on which the shanks are spaced 18 inches apart. The same general design may be followed in constructing a soil sealer of smaller size for use on equipment with shanks spaced closer together.

The device has a slightly curved rhomboid-shaped surface composed of three separate steel plates. (See drawing for dimensions.) These plates are attached to a frame consisting of two pieces of angle iron and a connecting steel strut. The plates are placed close together and bolted to the frame for easy replacement if necessary. Four flat head bolts secure each plate and are inserted from the underside. The heads are counter-sunk flush with the plate to provide a smooth surface. The angle irons are placed 5 inches apart with the upright sides facing each other. At a point 11-1/2 inches from the upper end of the angle irons, a 15° bend is made away from the standing side of the angle iron. The lower 12 inches of each angle iron is then curved back toward the standing side. The radius of the curve is 15 inches. (See drawing.) The steel plates are also curved to this radius and attached to the angle irons so that a line midway between the angle irons passes through the center of the rhomboid.

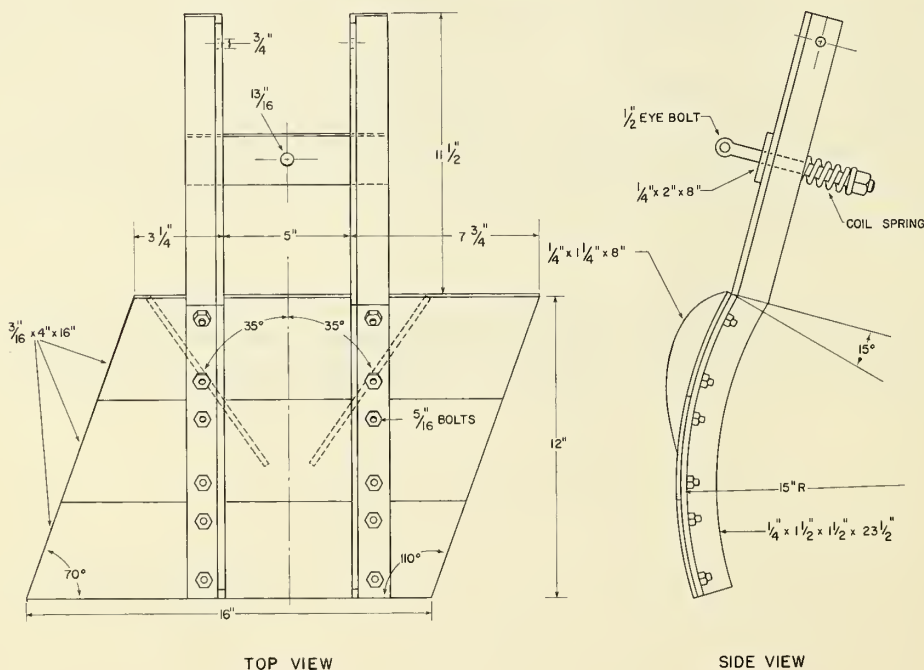
A steel plate is welded to the underside of the angle irons above the rhomboid. A hole is drilled in the center of the plate for the pressure adjustment assembly and at the end of the standing side of each angle iron for the hinge pin.

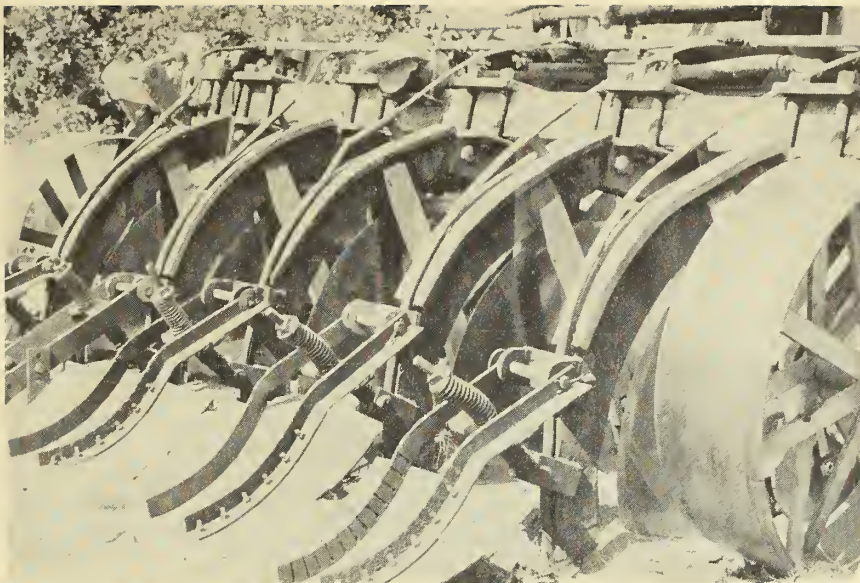
To the underside of the top plate of the rhomboid are welded two steel strips to form an open-apex vee. These strips or fins are centered on a line midway between the angle irons and form a vee of 70°. The fins are blunt on the leading edge and taper off until they are flush with the plate at their trailing edge. The fins act as guides to direct the soil into the open furrow.

The furrow sealing device is mounted on the shank that opens the furrow. A bolt is placed through brackets provided on the shank and the holes in the angle iron frame. Held in place with a cotter pin, it permits the device to pivot up and down. A spring loaded eye bolt is placed through the hole in the plate connecting the angle irons and fastened to the shank below the hinge brackets. Adjustment of the nut on the eye bolt changes the force with which the sealer presses and levels the ground. This arrangement allows the furrow sealer to ride over solid obstructions while still having sufficient pressure to pack the surface of the soil.

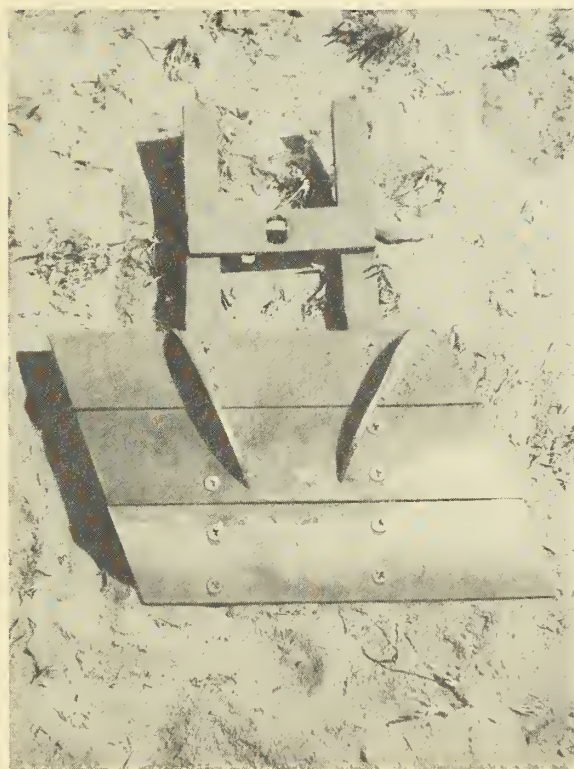
Rectangular sealers tend to leave a ridge of soil between each sealer as they move over the ground surface. Rhomboid-shaped sealers, with the leading acute angle of one sealer overlapping the trailing acute angle of the next, eliminate ridging of the soil. By using one of these furrow sealers behind each shank, the ground is left with a smooth pressed surface, assuring more effective sealing of the fumigant within the soil.

DEVICE FOR SEALING FUMIGATION FURROWS
FOR 18 INCH SHANK SPACING





Furrow sealing device installed on soil fumigation equipment.



Underside view of sealer, showing fins which move soil into open furrow.

